

BOTANY.—*A new species of Taphrina on sugar maple and black maple.*¹ ANNA E. JENKINS, Bureau of Plant Industry. (Communicated by JOHN A. STEVENSON.)

In May and June, 1922, specimens of a leaf spot on sugar maple (*Acer saccharum* Marsh.) and on black maple (*A. nigrum* Michx.) from Yellow Springs, Ohio, were received from O. L. Inman, Antioch College, who asked for information concerning the cause of this dis-

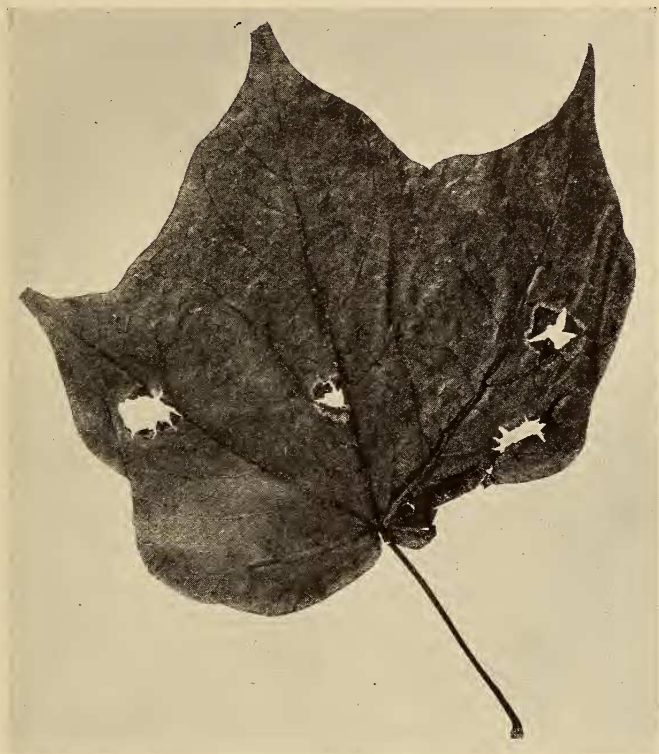


Fig. 1.—*Taphrina* on black maple. Antioch, Ohio, June 1922. Collected by O. L. Inman. $\times 1$.

ease then appearing in destructive form on these two native maples. He wrote that he had compared the fungus present on the lesions with *Gloeosporium apocryptum* Ell. and Ev. (2), but that from the description he was not certain that it was this species. At about the same time a specimen of sugar maple, affected in the same way, was received from W. T. Morse, of the Maine Agricultural Experiment Station. The specimen had come from Rockport, Morse wrote that

¹ Received July 8, 1938.

the disease was unfamiliar to him, but that, although he had found no fungus fruiting on the leaf spot, it appeared to be of fungus origin. From Pennsylvania a specimen was also sent for identification by L. O. Overholz.

Taphrina, with small, inconspicuous asci, mostly overmature and with spores and conidia lying free on the substrata, was found on all these specimens, which at first sight had not suggested a disease of this etiology (Fig. 1).

In the attempt to learn more of the history and distribution of the newly discovered *Taphrina*, phanerogamic herbarium specimens were examined for the presence of the leafspot. This search revealed that the fungus was not new, but that it had been present in this country for many years. The *Taphrina* was found on specimens of *Acer saccharum* collected as far west as Missouri and as far south as Georgia. The earliest was dated 1894.

The *Taphrina* was also present on maple leaves, evidently those of sugar maple, gathered in June 1922, in New Hampshire, New York, and Indiana. This material was received at the Branch Laboratory of the Division of Forest Pathology, then located at Providence, R. I., and was examined for asci of the *Taphrina* in March, 1923, by Alma M. Waterman and the writer. It appears that Collins' (2) report in 1922 of *Gloeosporium apocryptum* on a maple leaf spot from New York and Indiana may have been based on the specimens just cited. The disease was apparently epiphytotic in 1922, as previously indicated in the Plant Disease Reporter (4). During the past three years this Reporter has recorded additional more or less severe occurrences of *Taphrina* maple leaf blister, which in some instances definitely concern sugar maple.

The specimens had originally been sent from Indiana to the Department for examination by entomologists, because it was thought that the trouble might be of insect origin. All three specimens were evidently from valued shade trees. The specimens from New Hampshire were received with the following comment:

The leaves of our fine trees show dark spots on them, then shrivel up, turn black and die, leaving the limbs entirely bare.

Likewise, the correspondent from New York wrote:

We have one tree which is dying from some disease. Last year one tree died in the same manner. The tree leaves out and looks perfectly healthy, then after the leaves are partly grown they turn black and fall off. Two trees near this one are partly affected.

In August, 1922, and in succeeding years until at least 1931, the



Fig. 2.—*Taphrina* on sugar maple, Walton, Del. Co., N. Y., August 1, 1923. $\times \frac{1}{2}$.

Taphrina was more or less prevalent in a certain locality at Walton, New York, as indicated by specimens to be cited later (Fig. 2). It was here found on both shade and forest trees. However, in 1929, sugar maples in a nearby locality, Northfield, were examined and no evidence of the disease was found. The fungus was easily culturable and was isolated from fresh specimens collected at Walton both in July, 1924, and in June, 1929.

This *Taphrina* possesses much smaller asci than the two American species, *T. lethifera* or *T. aceris*, discussed in a recent article (5). They are also not so large as in the two unnamed American species attacking *Acer* first reported by the writer in 1925 (4), and now being measured for description. On the other hand the fungus in question appears to be nearer to *T. acericola* Massal. (6), known only on *Acer campestre* L. in Italy. Specimens were exchanged with Massalongo, and at first it was thought that the American *Taphrina* on sugar maple and black maple (Fig. 3) might be this species, despite slight differences in measurements and the evidently more evanescent



Fig. 3.—*Taphrina sacchari*. Asci or fragment of asci, *a* and *b*, showing basal cells, *a* containing 8 ascospores, *c* and *d*, lower part of two asci showing basal cells, *e*, ascospores two of which are sprouting.

asci of the American fungus. In 1924, a few trees of *Acer campestre* were planted near affected trees of sugar maple at Walton, but these have never become infected. The other species on *Acer campestre* is *T. jaczewski* Palm (*Exoascus confusus* Jacz. non Atk. (3)), also with comparatively small asci, of which specimens were kindly sent by Jaczewski. This fungus forms witches' brooms and appears to be entirely distinct. For the American species on sugar and black maples the name *Taphrina sacchari* is proposed, and it is described as follows:

Taphrina sacchari n. sp.

Spots few to numerous, scattered, sometimes near the veins, deciduous, sometimes causing the lobes of the leaf to bend or roll toward the center of the leaf above, circular, subcircular, or irregular, reaching 1.5 cm diam, larger by confluence, often circular to subcircular and less than 1 cm in diam, (on dry specimen) "pinkish buff"² below and "ochraceous tawny" above, to "cinnamon buff," "snuff brown," "clove brown," "bister" or blackish brown; asci hypophyllous, cylindrical-clavate, rounded or truncate, 16-24 (of sometimes 28) \times 6.7-10 μ , stalk cell variable, exceeding the diameter of the ascus, 5-10 μ high \times 10-16 μ wide, 8-spored; spores subglobose to elliptical, 4-5 \times 6-7 μ .

Near *Taphrina acericola* Massal.

Hypophylla, maculas, 1 cm. usque 1.5 cm in diam efficiens; asci cylindrico-clavati, saepe 16-24, interdum 28 \times 6.7-10 μ ; cellulae basilares 5-10 \times 10-16 μ ; sporidia subglobosa vel elliptica, 4-5 \times 6-7 μ .

DISTRIBUTION AND SPECIMENS EXAMINED

On *Acer nigrum*

OHIO, Yellow Springs (Antioch College), June 68550³ *Type*, and May 68552, 1922, O. L. Inman.³

On *Acer saccharum*

ARKANSAS, Fayetteville, May 5 (69587) and May 24 (69877) 1935, E. H. Young.

GEORGIA, Gap of Dick's Ridge, Whitfield Co., July 27, 1900, R. Harper (68562). Fragment of phanerogamic specimen in U. S. National Herbarium, No. 38467.

INDIANA, Centerville, June, 1922, Ellen Ranch. Comm. Frederick J. Haskins Information Bureau (68556).

MAINE, Rockport, June 1922 (68553 *Type*) and June 26, 1922 (68554), J. Achorn. Comm. W. J. Morse.

MICHIGAN, Lansing "near President's house," July 7, 1894 (68561). Fragment of No. 26 ex Herb. Mich. Agr. Coll. in U. S. National Herbarium No. 201687.

MISSOURI, Galena, Stone Co., May 25, 1914, Coll. E. J. Palmer (68563). Fragment of phanerogamic herbarium specimen in U. S. National Herbarium No. 588420.

NEW HAMPSHIRE, Center Conway, June, 1922, Charles Baird (68557).

NEW YORK, Andover, June 9, 1922, Bernice Nye (68558); vic. Ithaca (Dr. Bull's Woods) July 9, 1927 (67979) and June 14, 1931 (67880) A. E. Jenkins, Walton (Mountain Home Farm), Aug. 20, 1922 (72869) and July 11 (68325), Aug. 1 (68548 and 68549); and Aug. 11 (72870), 1923, A. E. Jenkins; Sept. 25, 1923, M. Taylor (72871); July 10 (68547) and July 14, 1924 (68536), F. A. Jenkins; July 18, 1924, O. R. Taylor (68525) June 20, 1925, E. J. House (68573); July 17 (72872) and July 22 (72873), 1927; June 18, 1929 (69298), July 26, 1930 (72874), A. E. Jenkins; June 1 (72875), and June 6 (72876), 1931, M. K. Jenkins; Sept. 15, 1931 (69080), A. E. Jenkins.

OHIO, Yellow Springs (Antioch College), June, 1922, O. L. Inman (68551). Vic. Oxford, May 24, 1922, Bruce Fink (identified as *Gloeosporium saccharini* E. and E.).

² Color readings given in quotations are based on Ridgway's Color Standards (7).

³ Accession number in Mycological Collections of the Bureau of Plant Industry.

PENNSYLVANIA, Elk Lake, June 28, 1922, G. E. Young, Comm. L. O. Overholts (68555).

TENNESSEE, Knoxville, May 27, 1934 (67781), and June 7, 1935 (70371) P. R. Miller.

WEST VIRGINIA, Rainelle, Sept. 20, 1928, W. A. Archer (U. S. Dept. Agr. and West Va., Agr. Exp. Sta. Plant Disease Survey 3033, labelled *Gleosporium saccharinum* E. & E.).

WISCONSIN, Madison, Univ. Drive, June, 1894, labelled *Gleosporium saccharinum* E. & E.

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ANTHROPOLOGY.—*Aconite arrow poison in the Old and New World.*¹ ROBERT F. HEIZER, University of California. (Communicated by HENRY B. COLLINS, JR.)

This short discussion is intended primarily to call attention to the distribution of the use of various species of *Aconitum* plants for arrow poison, and to indicate the possible significance of these occurrences. *Aconitum* is a genus of plants belonging to the Ranunculaceae, the buttercup family, embracing about 60 species. Aconite contains quantities of an alkaloid, pseudoaconitine, a very deadly poison. The pharmacology and toxicology of aconite are not dealt with here. Santesson (1936) and Lewin (1923) have much data on these.

H. B. Collins (1937, pp. 280, 345, 373-378) and F. de Laguna (1934, pp. 217-220) present evidence indicating an Asiatic-American culture connection *via* the Aleutian islands, basing their conclusion on the distribution of such elements as the oval stone lamp, roof entrance, labret, refuge island, notched and grooved stones, stone with hole, hunter's lamp with ring, bone arrowhead with blade but no barbs, etc. For the most part these elements seem to be explainable as having an American provenience, the Asiatic littoral being the recipient. The occurrence of the use of the extract of pounded aconite

¹ Received May 13, 1938.